ABSTRACT OF DISCLOSURE

An improved electro-larynx includes a linear transducer and/or an improved waveform generator. The improved electro-larynx sets up a sound wave within the pharynx of the user which closely approximates a normal glottal excitation. The linear transducer preserves the

5   harmonic structure of a glottal source wave generated by the waveform generator and translates it into a vibration. The transducer includes an armature assembly, suspension assembly, and coupler disk coupled together to move in concert. The armature assembly vibrates as a function of the desired and input glottal source wave, which in turn causes an immediate and corresponding vibration of the coupler disk. The suspension assembly constrains armature

10   movement to one dimension and provides additional compliance. The coupler disk includes a substantially flat surface suitable for engaging the surface of a user's throat and vibrates as a linear function of the input glottal source wave. The improved waveform generator produces a relatively good approximation of an actual glottal source waveform by preferably deriving it from actual voice data and having the effects of the modulation of the vocal tract removed. As a

15   result, the harmonic structure of the glottal source waveform has overtones which drift in frequency, similar to normal glottal excitations. The waveform generator also allows user adjustment of the pitch and amplitude of the glottal source wave and smoothes out any distortions caused by the process of obtaining the glottal data used to generate the glottal source wave. The waveform generator bolsters the frequency response at the high end of the spectrum

20   to compensate for any roll-off, yielding a frequency response spectrum of about 20-5Khz. The responsiveness of the linear transducer allows the glottal source wave's pitch, amplitude, and harmonic structure to be communicated through the coupler disk and realistic glottal source waves to be transduced into the user's pharynx, resulting in the production of substantially normal speech.